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BIOLOGICAL EVALUATION OF THE SUNNYSIDE INSECT SALVAGE TIMBER SALE, GREENVILLE RANGER DISTRICT, PLUMAS NATIONAL FOREST

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ABSTRACT

Individual trees in the Sunnyside Insect Salvage Timber Sale, Subdivision 2 and 3, were evaluated to determine, from an entomological standpoint, whether they were "Priority I Timber" as defined in C2.365 of the Sale Contract. A total of 28 trees tagged by the sale purchaser were examined. Only 6 (21%) of the tagged trees were considered Priority I. Two untagged trees were also evaluated; both were Priority I.

INTRODUCTION

On November 4, 1980, Dr. John Wenz (Entomologist) and Dr. Gregg DeNitto (Plant Pathologist) of the Forest Pest Management (FPM) Staff met with Joe Barratt (Timber Management Officer) and Frank Fick (Sale Preparation/Administration Officer) of the Plumas National Forest to discuss the need for and objectives of a biological evaluation of the Sunnyside Insect Salvage Timber Sale on the Greenville Ranger District. The purpose of the evaluation was to determine, from an entomological standpoint, whether trees tagged by the sale purchaser (silver-colored aluminum tree tags, identified by a 4-digit number followed by "Schmidbauer Lumber Inc."), were "Priority I Timber". "Priority I Timber" is defined in C2.365 of the Sunnyside Insect Salvage Timber Sale Contract as including ". . . barkbeetle infested or dead trees meeting Utilization Standards".

Trees were examined on November 5-6, 1980 in Timber Sale Subdivision No.2, T.26N., R.8E., Sec. 7 and 18, and in Subdivision No.3, T.26N., R.8E., Sec 5, 7 and 17 (Figs. 1 and 2). Drs. Wenz and DeNitto were accompanied on both days by Gary O' Brien (Timber Sale Administration), Greenville Ranger District, and on November 5 by Richard Castaldini (Silviculturist), Plumas National Forest. Consideration was given to the guidelines stated in the

2430 Commercial Timber Sale memorandum of August 3, 1978 (see Appendix) establishing Forest-wide salvage sale marking guidelines. Photographs were taken of each tree inspected.

RESULTS

Results of the evaluation are given in Table 1. A total of 30 trees were examined, 28 of which were tagged. One of the untagged trees (#6) was currently infested at breast height with successfully developing broods (larvae and pupae) of the western pine beetle, Dendroctonous brevicomis LeConte (family Scolytidae). This tree was probably attacked during the late summer of 1980; the foliage was just beginning to fade at the time of examination but will completely fade during the spring/early summer of 1981. Trees successfully attacked by D. brevicomis die, and this tree is a good example of a "presently infested" Priority I tree. The other untagged tree (#10) was marked with a blue-"T". This tree had a recently (within the last 1 to 2 years, as evidenced by the retention of faded needles) dead top to approximately 18-20 inches bole diameter, probably caused by the fir engraver Scolytus ventralis LeConte (Scolytidae) and/or wood borers of the families Cerambycidae and/or Buprestidae. In addition, Cerambycid wood borers, probably the roundheaded fir borer, Tetropium abietis Fall, were found in the lower bole. This tree is not likely to recover from such damage and may well die within two years; it can reasonably be classified as a Priority I tree. Of the remaining 28 tagged and/or marked trees, 6 (21%) were rated as Priority I. Of these, 5 were dead and the 6th (#9, tag #7285) had about 50% of the crown recently killed to about a 10-12 inch stem diameter, probably by S. ventralis. It is likely that the rest of the bole will become infested with the fir engraver and/or the roundheaded fir borer within two years. The remaining 23 trees (79% of the tagged trees) were not Priority I trees under the insect salvage definition and marking guidelines referenced above.

DISCUSSION

Certain species of bark beetles (Scolytidae) are considered "primaries" because successful attacks by these species result in the death of the host tree. Although they often prefer, or have more frequent success in weakened or unthrifty trees, these primary species are capable of killing healthy, vigorous trees. Relevant primary species include the following: the western pine beetle, D. brevicomis, in ponderosa and Coulter pines; the mountain pine beetle, D. ponderosae Hopkins, in sugar, lodgepole and ponderosa pine; the Jeffrey pine beetle, D. jeffreyi Hopkins, in Jeffrey pine; and the Douglas-fir beetle, D. pseudotsugae Hopkins, in Douglas-fir.

Other bark beetles that attack limbs, small branches and twigs or that only attack dead and dying trees are termed "secondaries". They are generally not capable of killing healthy, vigorous trees and can infest trees or parts of trees without causing the immediate death of the host tree. It is probable that many trees in a given forest are technically infested with secondary bark beetles. However, such secondary beetles are rarely the

direct cause of mortality and living trees infested only with these secondary bark beetles should not be classified as Priority I trees. Most roundheaded (Cerambycidae) and flatheaded (Buprestidae) wood borers also generally function as secondaries.

Situations involving trees attacked by two other bark beetles, the red turpentine beetle, Dendroctonus valens LeConte, and particularly the fir engraver, S. ventralis, are more complicated because they can act as both primaries and secondaries. D. valens can attack most pine species within its geographic range including ponderosa, sugar, lodgepole and Monterey pines. Under "normal" conditions it confines its attack to the lower 3 feet of the bole and the root crown, is often restricted to one panel or 1/4 to 1/2 of the bole circumference, and does not kill the host tree. However, under stress conditions, such as a drought when trees are weakened, attacks can occur 15 feet or so up the main bole and are often found tunneling around the majority of the tree circumference. Under the latter conditions, the red turpentine beetle can be the immediate cause of death. Such trees also have a high likelihood of being attacked by one of the primary bark beetles and, thus, might well be considered as Priority I. However, the occurrence of D. valens under normal conditions is generally not a valid reason for Priority I designation.

The fir engraver attacks true firs, including white, red and grand fir. It can cause three types of injury: 1) tree mortality, 2) top-kill and 3) patch or strip kill. Trees that are successfully attacked over much of the main bole will die, and under these circumstances, S. ventralis acts as a primary bark beetle. The fir engraver can also cause top-kill characterized by faded, reddish-brown tops (recently killed) and by old "spike" tops and trees with tops composed of secondary leaders. The extent of the crown affected varies widely. When more than 1/3 of the height of the live crown has been recently killed it is probable that the rest of the bole will become infested with the fir engraver and/or the roundheaded borer and die within two years, particularly if additional indications of low vigor are present (e.g., poor needle retention, off-color foliage, branch flagging and/or die back). Such trees can reasonably be considered as Priority I. However, if less than 1/3 of the height of the live crown is infested, the chances of the tree dying within two years are considerably less. Such top-killing is generally restricted to that portion of the leader less than 6 inches in diameter and is often due to secondary bark beetles, such as Scolytus praeceps LeConte. Trees so affected are generally not Priority I trees. The third type of fir engraver-related injury occurs when broods partially develop or completely develop and emerge from small sections of the bole ("strips" or "patches") without destroying enough of the cambium to kill the tree. The dead patches of cambium heal over, leaving a brown pitch pocket, and trees can survive such attacks for years. Clear "pitch streamers" are sometimes associated with patch kill, but more frequently are associated with aborted, unsuccessful fir engraver attacks, and are not necessarily an indication that the tree is going to die soon. Patch kills alone are not justification for Priority I designation.

SUMMARY

In summary, from an entomological standpoint, the salvage marking guidelines given in Appendix I appear valid, excepting the points discussed above. Most (79%) of the tagged trees examined were not Priority I trees based on entomological considerations.

TABLE 1. SUMMARY OF INDIVIDUAL TREE EVALUATIONS, SUNNYSIDE INSECT SALVAGE TIMBER SALE, NOVEMBER 5 AND 6, 1980, GREENVILLE RANGER DISTRICT, PLUMAS NATIONAL FOREST.

TREE NO.	TAG NO.	PAINT MARKING	SPECIES[1]	DBH[2] (IN.)	100% DEAD CROWN[3]	INSECT-INFESTED[3,4]	50% RECENT DEAD CROWN: INSECTS[3]	PRIORITY I
Sub-Division 2								
1	2588	White	DF	31	No	No	No	No
2	2583	White	PP	28	No	No	No	No
3	2436	White	PP	22	No	No	No	No
4	2582	White	DF	32	No	No	No	No
5	2505	White	PP	48	No	No	No	No
6	-	-	PP	20	No	Yes	No	Yes
Sub-Division 3								
7	7296	-	WF	24	No	No	No	No
8	7297	-	WF	26	No	No	No	No
9	7285	-	WF	31	No	?	Yes	Yes
10	-	Blue-T	WF	28	No	Yes	Yes	Yes
11	7772	-	DF	55	No	No	No	No
12	7534	-	IC	22 (est)	Yes	-	-	Yes
13	7541	-	WF	54	No	No	No	No
14	7542	-	IC	24	Yes	-	-	Yes
15	7543	-	PP	21	Yes	Yes	-	Yes
16	7555	-	IC	41	No	No	No	No
17	7553	-	DF	34	No	No	No	No
18	7552	Orange	JP	16	No	No	No	No
19	7554	-	DF	35	No	No	No	No
20	7556	-	DF	43	No	No	No	No
21	7557	-	JP	14	No	No	No	No
22	7558	-	WF	20	No	No	No	No
23	7559	-	WF	42	No	No	No	No
24	7560	-	JP	16	Yes	-	-	Yes
25	7561	Blue-T	WF	15	Yes	-	-	Yes
26	7562	-	WF	28	No	No	No	No
27	7563	-	WF	34	No	No	No	No
28	7564	-	WF	16	No	No	No	No
29	7565	-	WF	21	No	No	No	No
30	7566	-	WF	21	No	No	No	No

DF=Douglas-fir PP=Ponderosa Pine
WF=White Fir IC=Incense-cedar
JP=Jeffrey Pine

Total Trees = 30
Total Priority I Trees = 8 (27%)
Total Tagged Trees = 28
Total Tagged Priority I Trees = 6 (21%)

[1] Diameter at breast height (4.5 feet above ground).
[2] Reference Appendix.
[3] See Discussion section.

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19	7554	-	DF	35	No	No	No	No
20	7556	-	DF	43	No	No	No	No
21	7557	-	JP	14	No	No	No	No
22	7558	-	WF	20	No	No	No	No
23	7559	-	WF	42	No	No	No	No
24	7560	-	JP	16	Yes	-	-	Yes
25	7561	Blue-T	WF	15	Yes	-	-	Yes
26	7562	-	WF	28	No	No	No	No
27	7563	-	WF	34	No	No	No	No
28	7564	-	WF	16	No	No	No	No
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APPENDIX

S.O.

2430 Commercial Timber Sales August 3, 1978

Salvage Marking Guidelines

Staff, District Rangers

In late June we distributed handwritten copies of salvage marking guidelines to be used for the balance of 1978. Some District people have not seen those guidelines. Therefore, we are sending them out in this letter. Please see that people preparing salvage sales are aware of these guidelines.

Guidelines For Salvage Sale Marking Remainder of 1978

Since (1) all Districts are short on manpower for the salvage program and (2) some mills have indicated they are considering not taking additional salvage, the following guides should be used, for sales that are not yet sold, to assure that the timber most urgently in need of harvesting gets harvested. Include the following trees in salvage sales.

1. Trees with 100% dead crown (don't have to be marked, but must be designated by TSC provision) - these include straw-colored, brown, red, or no needled trees. 100% dead trees to be left for wildlife, soil, protection, etc. must be identified on ground and covered by TSC provision.

2. Trees presently infested with insects of the following species: Western pine beetle (D. brevicornis); Mountain pine beetle (D. ponderosae); Jeffery pine beetle (D. Jefferyi); Douglas-fir bark beetle (D. Psuedotsagae); Red turpeutine beetle (D. valens).

3. Trees with more than 50% of the crown dead from recent insect attacks - not old spike tops.

Sometimes it may be desirable to include other trees for specific local reasons, such as, (1) on helicopter and skyline sales including, (a) trees with 10-20% dead crowns, (b) Douglas-fir infested with flathead borers, (c) additional green trees where salvage harvest is so heavy that it creates a need to clearcut an area and reforest it. The decision of how much additional timber to include depends

on such factors as:

a. Species and size - small trees (young-growth trees) of all species deteriorate rapidly, sometimes within a month or two (from first visible needle fade) during the summer. Sapwood of all species breaks down rapidly. However, because old-growth sugar pine and Douglas fir have high percentages of heartwood, they remain merchantable for several years although there is volume and value loss during that period. Old-growth ponderosa pine, Jeffery pine, white fir and red fir deteriorate rapidly and are usually unmerchantable in 3-6 months (from first visible needle fade) during the summer. Winter weather retards deterioration. Therefore, a PP, JP, WF, or RF that dies in May would usually be unmerchantable by winter.

b. When is next planned entry into area? 1 year; 5 years?

c. What is leave volume/acre? Should we regenerate now?

d. What is overall stand condition? Generally poor? Generally healthy? Young-growth? Old-growth?

e. What is logging system? Tractor logging is flexible and lends itself to re-entry for relatively low volume/acre. Skyline and helicopter are less flexible.

Remember - our objective is to harvest the trees that must be harvested this year or be lost. If a tree will still be around next year or for the next entry - salvage or otherwise - generally it should be left for right now.

JOE BARRATT
Forest Timber Officer

cc: Norman E. Wykoff
Frank Fick
Richard E. Castaldini
Frank Ferguson

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